

SPECIAL PROVISIONS
S. KINNICKINNIC AVE. STORM WATER TREE PROJECT
VARIOUS LOCATIONS
PLAN FILE NOS. 198-5-90, 241-19, 241-20, 241-21, 241-22, 241-23, 241-24, 241-25

SPECIAL PROVISIONS, GENERAL NOTES:

1. Standard Special Provisions, plan file number 52-4-51, dated May 1, 2013 or latest revision thereof and the Street Construction Specifications dated 1992, are part of this contract.
2. All work shall be completed by August 5, 2016. The number of allowable working days for this project is 83 days. The contractor shall coordinate start date with all necessary parties as required by law and indicated in these special provisions.
3. Various events along South Kinnickinnic Avenue will occur during the contract period for this project. During these events South Kinnickinnic Avenue will be closed at various locations. Anticipated events are as follows:

| <i>Event</i> | <i>Anticipated Limits</i> | | <i>Anticipated Event Date</i> | <i>Project Locations Affected (See P.F. No. 241-19)</i> |
|--|---------------------------|---------------|-------------------------------|---|
| | <i>From</i> | <i>To</i> | | |
| Tour of America's Dairyland Bicycle Race | E. Ward St. | E. Linus St. | 6/24/2016 | 1 |
| Fourth of July Parade | E. Lincoln Ave. | S. Logan Ave. | 7/4/2016 | 1 |
| South Shore Frolics Parade (Tentative) | E. Lincoln Ave. | S. Ellen St. | 7/16/2016 | 1, 2, 3, 4, 5 |

As a result of the events above various project locations must be completed as follows:

1. All work at Location 1 as shown on P.F. No. 241-20 shall be completed prior to 6/23/2016.
2. All work at Locations 2, 3, 4, and 5 as shown on P.F. Nos. 241-20, 241-21, 241-22 shall be completed prior to 7/16/2016.

Dates and limits of the events are approximate and may change. Reasonable adjustments in construction schedule shall not raise a claim for an extra.

4. It is recommended that the Contractor inspect the project sites prior to bidding. The contractor may view the interiors of the catch basins and connected drains. Existing catch basins are typically located in the parking lanes of the roadway. During the site visit the Contractor should be aware and make provisions to safely inspect the sites as traffic will be active.
5. The City reserves the right, at the discretion of the Commissioner of Public Works, to increase or decrease the amount of work at the time of contract award. The amount of work to be completed is contingent upon the available funds, the unit prices bid and existing field conditions
6. Within ten (10) business days of the award of this contract, the contractor shall mail a notice of the project to the City of Milwaukee Construction Section at 841 N. Broadway, Room 710, Milwaukee, WI 53202 for review and approval. Within five (5) business days of approval, the contractor shall mail the project notice to all affected area residents and businesses. It shall be the sole responsibility of the contractor to ensure that all notices are conveyed to the public regarding this project. A sample notice is included in the contract documents. Contract work shall not start prior to completing the notice requirement. Any delay in contract completion as a result of non-compliance shall be the responsibility of the contractor.
7. The contractor shall post City of Milwaukee Project Identification ("BLUE") signs as directed on each project in this contract. The City will provide blank signs for the contractor to fill in contact information and post.

8. A **mandatory** pre-bid meeting will be held at 10:30 a.m. on Thursday, March 3, 2016 and is open to all interested parties for the purpose of discussing the requirements of the solicitation. The meeting will be held in room 820 of the Frank P. Zeidler Municipal Building located at 841 North Broadway in Milwaukee, Wisconsin.
9. A mandatory preconstruction meeting shall occur at least ten (10) working days prior to the start of any work on this contract. Please contact Mr. Anthony Jazdzyk of the EES, at (414) 286-2496, to schedule the pre-construction meeting. Attendance of the prime contractor at this meeting shall be mandatory. Attendance of any subcontractors is optional but recommended. The Contractor shall supply the construction engineer and EES with his proposed work schedule at this meeting.
10. The project sites are located within highly developed urban areas with high traffic volumes (both pedestrian and vehicular). The Contractor shall contact the owner/residents a minimum of 7 days prior to work commencing in a specific location. Where sidewalks will be removed, the Contractor shall coordinate with business owners/residents to ensure safe ADA compliant access is maintained to businesses and residents directly adjacent to the work area and around the project site. In the event work is not directly preventing access to a business or residence, the Contractor may use signage and existing crosswalks to direct pedestrians to cross streets in advance of work areas.
11. Kinnickinnic Avenue is comprised of a travel lane, parking lane, and bike lane in each travel direction. The Contractor shall maintain one (1) 12-foot traffic lane and one (1) 4-foot bike lane, in each direction, throughout the project. The Contractor shall restrict work to the sidewalk and parking lane directly adjacent to the work areas. The Contractor shall provide all necessary traffic control, barricading, barriers, etc. per the Manual on Uniform Traffic Design (MUTCD). The Contractor shall not impede traffic in any way during non-working hours.
12. The contractor shall contact Mr. James Brown at (414) 286-3276 of the City of Milwaukee Transportation Section at least three (3) days prior to the start of the project regarding the installation of temporary "no parking" signs. The contractor shall also contact Mr. Brown to arrange for the removal of signs after work is completed.

Prior to the start of construction, the contractor shall supply a traffic control plan outlining traffic flow patterns around the work zone and access to businesses and residences to Mr. Brown at least ten (10) days prior to the start of construction.
13. At the end of each work day any open excavations, backfilled areas waiting for paving, etc. shall be plated or bridged to allow pedestrians and/or vehicular traffic to pass safely through the project area.
14. If desired, the Contractor may use 143 East Lincoln Avenue as its staging and material/equipment storage area. Storage will be limited to an approximately 5,000 square foot area within the property. The Contractor may request additional staging area if needed; however, due to other uses of the property it may not be available. All materials should be stored on pallets or tarps. The Contractor shall contact Mr. Anthony Jazdzyk of the EES, at (414) 286-2496 a minimum of two (2) weeks prior to the start of construction to coordinate access to the staging area. Any materials stored within the staging area are the responsibility of the Contractor.
15. The contractor shall be fully responsible for the operation and maintenance of all project sites and of the staging area on this contract from the beginning of work until the project is fully operational and accepted by the City. This includes but is not limited to erosion control, safety barricading, traffic and pedestrian control, protection of utilities (both private and public), site security, etc.
16. The contractor shall take whatever precautions necessary to prevent debris from entering the sewer system. The contractor is responsible for the immediate removal of debris that enters the system during construction.
17. Prior to placing any inlet baskets, the contractor shall report clogged catch basin drains to the Underground Operations Unit at (414) 286-3731 so that they can be cleaned.
18. All materials and equipment installed as part of this contract shall be new and first-rate quality unless otherwise noted.

19. All work and materials shall be in full conformance with the latest applicable rules, regulations, requirements, and specifications of local, state, and federal laws, American Water Works Association (AWWA), National Electrical Code (NEC), National Fire Protection Association (NFPA), United States of America Standards Institute, National Board of Fire Underwriters, National Electrical Safety Code, American National Standards Institute (ANSI), National Electrical Manufacturers Association (NEMA), American Society for Testing and Materials (ASTM), Underwriters Laboratories (UL), Occupational Safety and Health Administration (OSHA), Manual on Uniform Traffic Control Devices (MUTCD), and City of Milwaukee Ordinances.
20. The Contractor shall obtain all permits and pay all fees required by utilities and governmental agencies having jurisdiction over the work. The cost of obtaining permits and paying fees shall be included in the unit price bids.
21. The Contractor shall protect and support gas lines, water mains, underground conduit (CUC), and all other utilities during construction and installation of the proposed items on this contract. The cost of supporting and protecting shall be included in the unit price bid for the respective work. Special care shall be taken when working around existing utilities. The contractor shall hand dig, hydroexcavate, or use other non-destructive excavation method (as approved by the City) wherever necessary to expose existing utilities so as to not damage any existing utilities when excavating using mechanical methods.
22. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions, quantities, utilities, and grade elevations, and inform the EES immediately of any discrepancies. In the event of conflict between existing and new improvements and/or utilities notify the EES immediately at (414) 286-2496. EES will provide a recommendation as to remedial action. Work may proceed in that area only upon approval of appropriate remedial action.
23. The Contractor shall contact Diggers Hotline to verify the locations of existing utilities. The Contractor shall be responsible for all utilities coordination and verifications before commencing any work on this project. Coordinate all work with the appropriate utility contractors, utility company and/or responsible public works agency.
24. The contractor shall notify Mr. RC Tally of the Construction Section at (414) 286-2497 at least three (3) working days prior to delivering any material or equipment to any work site and/or staging area.
25. At many work locations along South Kinnickinnic Avenue various street lighting cables and facilities run parallel to the curb. Street lighting facilities include both low voltage and high voltage cables. The high voltage facilities are typically located within two (2) feet behind the back of curb and more than one and a half (1.5) feet in depth. The low voltage cables are typically located one (1) foot off the sidewalk to the curb and more than one and a half (1.5) feet in depth. At some locations along South Kinnickinnic Avenue the City has a double lighting system. At these locations there is a high voltage series cable running behind and parallel to the curb and a lower voltage multiple cable running below the sidewalk between the property line and the curb. The approximate location of the cables is shown on the plans. These locations are based on the best available records but are not guaranteed to be accurate. The Contractor is responsible for all coordination with Digger's Hotline to further locate, identify, and mark the utilities. It is strongly advised to notify Digger's Hotline to tone out the exact location of any street lighting cable within the project limit.

Special care shall be taken when working around the street lighting facilities. At each location the contractor shall hand dig, hydroexcavate, or use other non-destructive excavation method (as approved by the City) to completely expose the street lighting facilities prior to performing any excavation using mechanical methods. Once the street lighting facilities are safely exposed, the Contractor shall contact with the Electrical Services Department to coordinate the installation of split duct cabling that will be installed by City forces. The Contractor shall contact Dennis Miller at (414) 708-4251 a minimum of three (3) working days prior to work at each location requiring installation of the split duct cabling.

At each location the Contractor shall be responsible for protecting all street lighting facilities and safely working around the utilities without disrupting service. The Contractor shall support any street lighting conduits and cable crossings.

No street lighting poles are anticipated to be disturbed by this project. All excavation shall be a minimum of five (5) feet away from existing poles to prevent undermining. If it is absolutely necessary for excavation to occur within five (5) feet of any existing poles, the Contractor is responsible for supporting the poles with the appropriate equipment. Any work involving the support of existing poles shall be approved by the City and all poles within the project limit are expected to remain in the same condition prior to any work per this project.

If street lighting facilities are damaged by the Contractor during the project the Contractor shall report any damage to the Street Lighting Shop at (414) 286-3015. The Contractor is responsible for all costs, delays, etc. to repair any street lighting facilities damaged during the project. All repairs/replacements will be performed by the City's Electrical Services Department and will be billed to the Contractor. Repairs to damaged street lighting by splicing are not allowed. Damaged street lighting facilities will be removed and replaced with cable/conduit that is continuous from pole base to pole base or from feed point to pole base.

During the project, if the Contractor cannot work around the street lighting facilities and alterations are required, the Contractor shall contact the street lighting engineer Eng-Kie Lee at (414) 286-2174 for an estimate of costs for alterations to street lighting facilities. Due to the extremely heavy work load on the Street Lighting shop, it is advised to contact the City's Electrical Services Department at least ten (10) business days before the work begins so any alteration to the street lighting facilities can be completed ahead of the sewer work.

26. The contractor shall contact Mr. Scott Baran of the Forestry Section at (414)286-3531 prior to removing any trees and prior to installing any vegetation.
27. The contractor shall contact Neenah Foundry at (414) 943-3500 to obtain all necessary castings.
28. The pavement restoration limits given on the plan sheets are approximate. The contractor shall note that the construction engineer may require changes in the restoration limits in the field. Any additional restoration quantities ordered by the construction engineer shall be paid based on the contract's unit price bid. Any additional restoration that is necessary due to the Contractor's negligence shall be at the Contractor's expense.
29. Items indicated as "not to scale" on the plans are representational in nature and shall not be used for measurements of any type. The contractor shall be responsible for determining locations, orientations, and elevations of all existing utilities, surface grades, etc. prior to coring holes in existing or new structures and ordering and installing new materials per this contract. The contractor shall be responsible for all costs to correct core holes, utilities, structures, etc. incorrectly placed. Other items requiring field determined locations shall be placed after consultation with the construction engineer, EES, and affected utility representatives. The contractor shall be responsible for coordinating these consultations. Reasonable location adjustments shall not raise a claim for an extra.
30. The following special provisions refer to specific bid items from the plans and supplement and/or alter the standard specifications for this contract:

A. TYPE "A" LAWN REPLACEMENT - BID ITEM NUMBER 50025

This item consists of furnishing all materials and labor to remove and replace the existing turf lawn with new Type "A" Lawn Replacement at locations as indicated on the plans and at any turf locations disturbed by the Contractor to complete the project. This work shall include but is not limited to removing and disposing of existing turf and topsoil, etc., minor grading (if necessary), subgrade preparation, and furnishing and placing topsoil and sod, etc.

Type "A" Lawn Replacement shall meet the requirements per section 2.7.4 Replacement of Lawns of the *STANDARD SPECIFICATIONS*.

All costs associated with this work shall be included in the unit price bid for Type "A" Lawn Replacement.

B. GRANULAR BASE COURSE – INCIDENTAL TO OTHER BID ITEMS

This item consists of furnishing and installing new Granular Base Course and is considered incidental to other bid items where new Granular Base Course is required.

Granular Base Course shall meet the requirements of $\frac{3}{4}$ Inch Graded Crushed Stone per section 8.43.7 GRADED AGGREGATE of the *STANDARD SPECIFICATIONS*.

The Contractor shall furnish and install Granular Base Course as to depths and indicated on the plans and these special provisions. Granular Base Course shall be installed to the following depths and requirements:

| Area | Depth (in.) | Max. Lift (in.) | Min. Proctor Compaction (%) | Min. Relative Density (%) |
|-----------------------|----------------|--------------------|--------------------------------|------------------------------|
| Below Curb and Gutter | 6 | 8 | 95 | 60 |
| Below Sidewalk | 6 | 8 | 95 | 60 |

See Special Provision 30-H Urban Tree Planting Cell (UTPC) System for additional information on placing Granular Base Course above and below UTPC System.

All costs associated with this work shall be included in the unit price bid for items where new Granular Base Course is required.

C. CONCRETE CURB & GUTTER - BID ITEM NUMBER 50316

This item consists of removing the existing curb and gutter and placing new Granular Base Course and Concrete Curb and Gutter. The work shall include but is not limited to removing existing curb and gutter and base course, adjustments to curb inlet frames and grates, and furnishing and installing deformed tie bars, Granular Base Course, new curb and gutter, and new concrete border around inlet frames and grates.

Concrete Curb and Gutter shall meet the requirements per section 2.7.3 Replacement of Pavements of the *STANDARD SPECIFICATIONS*.

The Contractor shall determine the length of curb and gutter required to be sawed and removed in order to install each storm structure. The length of replaced curb and gutter outside the storm structure shall be kept to a minimum as determined by the method of operation and the work required; however, in no case shall the replaced curb and gutter exceed a 10' dimension. If an existing joint or crack is within two feet of the removal limit, the removal shall be to the joint or crack.

The replaced curb and gutter elevations shall match the existing curb and gutter elevation at the saw line. All elevations locations and elevations as provided on the plans shall be field verified. A minimum of two (2) pavement dowels shall be used on each side of the new curb and gutter to connect to existing curb and gutter at the saw line.

At locations where 2' x 2' Storm Water Curb Inlets and Inlet Frame and Grate, MS 51 & MS 57 are to be installed, the paved area adjacent to the inlet shall be restored with a one (1) foot wide concrete border placed on six (6) inches of compacted Granular Base Course and poured integrally with the adjacent concrete curb and gutter (see detail on P.F. No. 241-25).

All costs associated with this work shall be included in the unit price bid for Concrete Curb and Gutter. Payment for full depth Pavement Sawing will be paid under a separate bid item.

D. CONCRETE WALK - BID ITEM NUMBER 50328

This item consists of removing and replacing the existing concrete sidewalk. The work shall include but is not limited to removing sidewalk and existing base course and furnishing and installing new Granular Base Course and Concrete Walk. This bid item also includes removing, storing, and reinstalling parking meters, bike racks, planters/flower pots, etc. as indicated on the plans and any minor adjustments required on utility appurtenances located within sidewalk areas.

Concrete Walk shall meet the requirements per section 2.7.3 Replacement of Pavements of the *STANDARD SPECIFICATIONS* and as modified hereinafter:

Approximate sidewalk replacement limits are indicated on the plans. The area of replaced sidewalk shall be kept to a minimum. Sidewalk shall be replaced at existing joints so that full slabs are removed and replaced. Quantities for additional sidewalk replacement that exceed those shown on the plans must be approved by the City's Construction Engineer.

Place concrete along tree openings as shown on the plans to retain the aggregate base course from migrating into the planting soil. When staking concrete forms (e.g. Concrete Walk around the tree openings), prevent stakes from penetrating the UTPC decks. Turn down edge of concrete paving to the UTPC deck along the edges of tree openings or planting areas to retain the aggregate base course material. Locations of tree openings are shown on the plans. Tree openings shall be 4.25 feet in length by 2.5 feet in width.

Where concrete walk is being replaced directly adjacent to existing building faces and/or foundation walls one (1) inch thick expansion joint materials shall be placed between the concrete walk and building. The expansion joint material shall be placed so the expansion joint can be sealed with a polyurethane joint sealer. Polyurethane joint sealer shall be self leveling, flexible, and provide a watertight barrier between the new Concrete Walk and existing building face/structure. Polyurethane joint sealer shall be Sikaflex 1cSL, W.R. Meadows Pourthane SL, or approved equal.

All costs associated with this work shall be included in the unit price bid for Concrete Walk. Payment for full depth Pavement Sawing will be paid under a separate bid item.

**E. 2'X2' STORM WATER CURB INLET- BID ITEM NUMBER 55039
INLET FRAME AND GRATE, MS 51 & MS 57 – BID ITEM NUMBER 55041**

These items consist of furnishing and installing 2' X 2' Storm Water Curb Inlet and Inlet Frame and Grate, MS 51 and MS 57 as shown on the plans. The work shall include but not be limited to excavation, preparation of subgrade and base, furnishing and installing inlet, adjusting ring(s), frame, and grate, and backfilling with material at the inlet.

Use precast inlet sections, risers, tops, and bases conforming to ASTM C913. Use a concrete mixture that contains not less than 564 pounds of cementitious material per cubic yard of concrete. If these units are wet cast then make them with air-entrained concrete containing 7.0 percent, +/- 1.5 percent, entrained air. Reinforcing steel shall meet the requirements of ASTM C 913.

The size and internal dimensions of the proposed inlet are shown on the plans. Inlets shall be designed to industry standards and meet the requirements of Wisconsin Department of Transportation (WisDOT) Inlets 2x2-ft. Minimum design specifications are as follows:

| | |
|--|------------|
| Sidewall Thickness: | 5 inches |
| Bottom slab thickness: | 5 inches |
| Compressive strength of concrete: | 4,000 psi |
| Tensile strength of reinforcing steel: | 60,000 psi |

Lid shall be heavy duty iron conforming to AASHTO M105, Class 30. Frame and grate shall be constructed as per the dimensions indicated on the detail drawings and be compatible to fit the on the 2'x2' Storm Water Curb Inlet. Frame shall be City of Milwaukee MS 51 and Grate shall be City of Milwaukee MS 57. Contact Neenah Foundry for information on ordering City of Milwaukee Frame and Grates.

A minimum of one (1) precast concrete adjusting ring shall be used to bring the inlet frame and grate to the desired grade as indicated on the plans. Concrete adjusting rings shall be secured with mortar.

The contractor shall protect and support the existing storm sewers, gas lines, water mains, valve boxes, street lighting, and all other utilities during the excavation and installation process. It shall be the discretion of the contractor to use tight sheathing and/or bracing during construction. Moreover, it shall be the contractor's

responsibility to field verify active utilities and to coordinate field work with the respective utility body. All field work and utility cost associated with this work shall be included in the unit price bid for the respective inlet.

A maximum of one (1) foot removals beyond the outside wall of the curb inlet will be allowed to be removed for installation of the curb inlet, inlet frame and grate.

All costs associated with furnishing and installing the Storm Water Curb Inlet and adjusting ring(s) shall be included in the unit price bid for 2'x 2' Storm Water Curb Inlet.

All costs associated with furnishing and installing the storm water inlet frame and grate shall be included in the unit price bid for Inlet Frame and Grate, MS 51 and MS 57.

F. BID ITEM NOT USED

G. 6" DIA. PVC CLEANOUT - BID ITEM NUMBER 70064

This item consists of furnishing and installing 6" Dia. PVC Cleanouts as shown on the plans. The work shall include but is not limited to furnishing and installing all pipe, tees, wyes, fittings necessary to construct the cleanout as indicated on the plans.

The 6" Dia. PVC Cleanout piping shall be SDR 35 polyvinyl chloride (PVC) conforming to ASTM D3034. The Contractor shall furnish all materials and conduct work in accordance with the requirements the *STANDARD SPECIFICATIONS*.

Securely connect sections of PVC pipe with solvent-cemented or gasketed joints.

PVC cleanout shall have watertight, adjustable cast iron lids adjusted and connected to the 6" Dia. PVC Cleanout piping. Lids shall be set at an elevation to terminate at grade and coordinated with new Concrete Walk elevations.

All costs associated with this work shall be included in the unit price bid for 6" Dia. PVC Cleanout.

H. URBAN TREE PLANTING CELL (UTPC) SYSTEM - BID ITEM NUMBER 80052

This item consists of furnishing and installing, per manufacturer's recommendations, Urban Tree Planting Cells (UTPCs) and other accessory materials/products to complete the UTPC system at locations indicated on the plans. The work shall include but is not limited to preparing existing subgrade and furnishing and installing aggregate base course, geotextile fabric, geogrid, UTPCs (bases, posts, and decks) in an approved orientation per the plans and manufacturer's recommendation, all associated materials (anchoring pins, strongbacks, plastic cable ties, wood blocking, etc.), general backfill for areas adjacent to the UTPCs, and any other work and materials to complete the work.

Products and Materials for Urban Tree Planting Cell System shall be as follows:

1. UTPC: UTPCs shall be fiber-glass-reinforced polypropylene structures designed to support sidewalk loads and be filled with soil for the purpose of growing tree roots, and rainwater filtering, detention and retention.

UTPC Manufacturer: The Contractor shall furnish UTPC structure (each with one (1) base, six (6) 2x posts, and one (1) deck) meeting the requirements of Silva Cell 2 as manufactured by DeepRoot Green Infrastructure, LLC (DeepRoot); 101 Montgomery Street, Suite 2850, San Francisco, California 94104; (415) 781-9700; (800) 458-7668; fax (415) 781-0191; www.deeproot.com or approved equal. The Contractor shall also supply all necessary accessory materials/products (e.g. anchoring pins, Strongbacks, etc.) as required by the manufacturer to install the product as a complete system. Associated materials include but are not limited to the following:

- a. Anchoring Pins: Threaded pins and cross bar for securing assembled UTPC to subbase.
 - b. Strongbacks: An accessory designed to stabilize the UTPC posts temporarily, during soil placement, and removed for reuse prior to placing decks
 - c. Plastic Cable Ties: A tensioning device or tool use to tie similar or different materials together with a specific degree of tension.
 - d. Wood Blocking: Nominal dimensioned lumber used for spacing assembled UTPCs.
2. Geogrid: Geogrid shall be woven polyester fabric with PVC coating, uni-axial or biaxial geogrid, inert to biological degradation, resistant to naturally occurring chemicals, alkalis, and acids. The Contractor shall supply Strata Systems, Inc. Stratagrid SG, TenCate Nicolon Geosynthetics Miragrid 2XT, Huesker Inc. Fortrac 35, Synteen SF 20 Biaxial, or approved equal meeting the following requirements:

| Test | Method | Value |
|---------------------------------|------------|------------------------------|
| Ultimate Tensile Strength | ASTM D6637 | 1850 lbs/ft (27.0 kN/m) Min. |
| Creek Reduced Strength | ASTM D5262 | 1000 lbs/ft (14.6 kN/m) Min. |
| Long Term Allowable Design Load | GRI GG-4 | 950 lbs/ft (13.9 kN/m) Min. |
| Grid Aperture Size (MD) | - | 0.8 inch (20 mm) Min. |
| Grid Aperture Size (CD) | - | 1.28 inch (32 mm) Max. |
| Roll Size | - | 6 ft Width Preferred |

3. Geotextile Fabric: Geotextile fabric shall be nonwoven polypropylene fibers, inert to biological degradation and resistant of naturally occurring chemicals, alkalis, and acids; applied to either the soil surface or between materials, providing filtration, separation, or stabilization properties. The Contractor shall supply ADS Geosynthetics 0801T, TenCate Nicolon Mirafi 180 N, Propex Geosynthetics Geotex 801, or approved equal meeting the following requirements:

| Test | Method | Value |
|------------------------------|------------|---|
| Grab Tensile Strength | ASTM D4632 | 200 lbs (900 N) Min. |
| Elongation | ASTM D4632 | 50% Min. |
| Trapezoid Tear Strength | ASTM D4533 | 80 lbs (350 N) Min. |
| Mullen Burst Strength | ASTM D3786 | 350 psi (2400 kPa) Min. |
| Puncture Strength | ASTM D4833 | 110 lbs (490 N) Min. |
| CBR Puncture Strength | ASTM D6241 | 500 lbs (2225 N) Min. |
| Apparent Opening Size | ASTM D4751 | 80 sieve (0.18 mm) Max. |
| Flow Rate | ASTM D4491 | 90 gal/min/ft ² (3870 l/min/m ²) |
| UV Resistance (at 500 hours) | - | 70% Strength Retained |

4. Aggregate Base Course: Aggregate Base Course material varies based on the orientation of the 6" Dia. Perforated Distribution and Underdrain PVC Pipe. See Plan File No. 241-25 for information about perforated pipe orientation and required Aggregate Base Course material depth and type.

For locations with Perforated Pipe Orientation Type 1 or No Underdrain:

Aggregate Base Course shall be open graded washed crushed stone meeting the requirements of AASHTO No. 57 Gradation. The required material gradation is as follows:

| Sieve Size | Percentage Passing by Weight |
|------------|------------------------------|
| 1½ Inch | 100% |
| 1 Inch | 95 – 100% |
| ½ Inch | 25-60% |
| No. 4 | 0 – 10% |
| No. 8 | 0 – 5% |

For locations with Perforated Pipe Orientation Type 2:

Aggregate Base Course shall meet the requirements of ¾ Inch Graded Crushed Stone per section 8.43.7 GRADED AGGREGATE of the *STANDARD SPECIFICATIONS*.

5. Backfill Material (Adjacent to UTPC): Backfill shall be clean, compactable, course grained fill soil meeting the requirements of the Unified Soil Classification System (USCS) for soil type GW, GP, GC with less than 30% fines, SW, and SC with less than 30% fines. Backfill materials shall be free of organic matter, trash, and other debris, and shall be free of toxic material injurious to plant growth.
6. Engineered Soil: Refer to Special Provisions 30-M Engineered Soil.

The Contractor shall submit to the EES for approval, a minimum of four (4) copies of material and construction information as described below:

1. Product Data: For each type of product, submit manufacturer's product literature with technical data sufficient to demonstrate that the product meets these specifications. Product data is required for the following products:
 1. Geotextile fabric
 2. Geogrid
 3. Urban Tree Planting Cells
 4. Aggregate Base Course
 5. Backfill Material
2. Urban Tree Planting Cells Mock Up. If the Contractor proposes an alteration in orientation of the Urban Tree Planting Cells the Contractor shall submit a mock up of the new layout of the cells. The Contractor shall also submit a letter of review and approval from the Urban Tree Planting Cell manufacturer stating they have reviewed the revised layout, plans, details, and specifications and it meets product installation requirements.

General UTPC Installation

The Contractor shall provide layout and elevation control during the installation of the UTPCs. The Contractor is responsible for transferring elevations from benchmarks, providing any required grade stakes, temporary benchmarks, surveying equipment and other means and methods to assure that the layout and elevations conform to the layout and elevations indicated on the plans.

Protect UTPCs from damage during delivery, storage, handling, and installation. Store UTPCs under tarp to protect from sunlight when the time from delivery to installation exceeds one week. Storage shall be on smooth surfaces free from dirt, mud and debris.

Perform handling with equipment appropriate to the size (height) of UTPCs and site conditions; equipment may include, hand, handcart, forklifts, extension lifts, or small cranes, with care given to minimize damage to UTPC bases, posts, decks and adjacent assembled UTPCs. Do not drive vehicles or operate equipment over the UTPC system until the final surface material has been installed.

Prior to the start of the Work, layout and stake the limits of excavation and horizontal and vertical control points to install the complete UTPC system.

Subgrade Compaction

Compact the existing subgrade below the areas to receive the UTPCs and confirm that the subgrade soil is compacted to a minimum of 95% of maximum dry density at optimum moisture content in accordance with ASTM D698 Standard Proctor Method. Proof compact the subgrade with a minimum of three passes of a suitable vibrating matching or apply other compaction forces as needed to achieve the required subgrade compaction rate.

Where indicated on drawings, install geotextile fabric over compacted subgrade per manufacturer's recommendations. When placing the layers of geotextile fabric the area must be dry, level, and smooth. After placing the fabric on grade, the contractor shall not allow traffic or construction equipment on the fabric. Roll out the fabric and pull taut manually to remove wrinkles, folds and creases. Join parallel strips of fabric by overlapping or sewing. Seams shall be overlapped per the manufacturer's recommendations. Minimum overlaps at joints shall be 18 inches. Minimum overlaps at butt splices between fabric rolls shall be 36 inches. Provide weights or pins to prevent the wind from lifting the fabric. Cover all tears, holes, or rips in the fabric with a patch of fabric overlapping the defect 36 inches in all directions. Cover all fabric within 48 hours of placement.

Install aggregate base to the depths indicated on the drawings, below the of UTPC base. Sub base aggregate shall extend a minimum of 6 inches (150mm) beyond the base of the UTPC layout. Compact aggregate base layer to a minimum of 95% of maximum dry density at optimum moisture content in accordance with ASTM D 698 Standard Proctor Method. Compact the subgrade with a minimum of three passes of a suitable vibrating compacting machine or apply other compaction forces as needed to achieve the required subgrade compaction rate. The maximum slope on the surface of the sub base shall be 5%. Where proposed grades on finished paving are greater than 5%, the Cells shall be stepped to maintain proper relationships to the finished grade. The grade and elevations of the base under the UTPCs shall be approved by the Construction Engineer prior to proceeding with the installation of the UTPCs.

Installation of UTPC Base

Install the UTPC system in strict accordance with manufacturer's instructions and as specified herein; where requirements conflict or are contradictory, follow the more stringent requirements.

Identify the outline layout of the UTPC structure and the edges of paving around tree planting areas on the prepared subbase, using spray paint or chalk line. Locate and mark other project features located within UTPC layout area (e.g. proposed utility pipes and structures, existing utility pipes, etc.). Apply marking to identify the extent of the UTPC layout around these features. Follow the layout as shown on the plans to ensure proper spacing and location of the UTPC bases. Verify that the layout is consistent with the required locations and dimensions of paving edges to be constructed over the UTPCs. Check each UTPC component for damage prior to placing. Reject cracked or chipped units.

Place the UTPC bases on the compacted aggregate base. Start at the tree opening and place UTPC bases around the tree openings as shown on the plans. Working from tree opening to tree opening place UTPC bases to fill in the area between tree openings. Maintain spacing no less than one (1) inch (25 mm) and no more than three (3) inches (76 mm) apart.

Follow the UTPC layout plan as shown on the plans. Install UTPCs around, over, or under existing or proposed utility lines as indicated on the plans. Level each UTPC base as needed to provide full contact with subbase. Adjust subbase materials, including larger pieces of aggregate, so each base sits solidly on the surface of the subbase. UTPC bases that rock or bend over any stone or other obstruction protruding above the surface of the subbase material are not allowed. UTPC bases which bend into dips in the subbase materials are not allowed. The maximum tolerance for deviations in the plane of the subbase material under the bottom of the horizontal beams of each UTPC base is ¼ inch in four (4) feet (6 mm in 1200 mm).

Anchor UTPC bases with two (2) crossbar/pin assemblies per base. Ensure that crossbar/pin assemblies are able to be installed clear of an underground utilities.

Installation of UTPC Posts

Attach 2x posts to the installed UTPC base. Each base will receive six (6) 2x posts. Place the end of the post with tabs into the base. Rotate post clockwise to snap in place.

Installation of Strongbacks, Geogrid, Backfill, and Planting Soil

For UTPC systems that have a perforated drain line(s) located inside or adjacent to the system, consult plans for layout and details.

Install Strongbacks on top of the UTPC posts by snapping into place over installed posts prior to installing planting soil and backfill. Strongbacks are required only during the placement and compaction of the planting soil and backfill. Move Strongbacks as the Work progresses across the installation. Remove Strongbacks prior to the installation of the UTPC decks.

Install geogrid around the perimeter of the UTPC system where the compacted backfill and planting soil interface. Do not place geogrid between the edge of the UTPCs and adjacent planting areas. Cut the geogrid to allow for a 6-inch (150-mm) overlap at the UTPC base and a 12-inch (300-mm) overlap at the UTPC deck. Provide a minimum 12-inch (300-mm) overlap between adjacent sheets of geogrid. Secure geogrid with cable ties below the top of the posts, along the post ridges.

Where UTPC layout causes a change in direction in the plane of the geogrid, slice the top and bottom flaps of the material so that it lies flat on the top of the cell deck and aggregate base course along both planes.

Place the first lift of backfill material loosely around the perimeter of the UTPC system, between the geogrid and the sides of the excavation. Place backfill to approximately the midpoint of the UTPC post. Do not compact. Place the first lift of Engineered Soil in the UTPC system to approximately the midpoint of the UTPC post. Level the Engineered Soil throughout the system. Required materials and payment for Engineered Soil is described elsewhere in these Special Provisions.

Bring engineered soil to the site using equipment and methods that do not overly mix and further damage soil peds within the soil mix. Soil mixes shall not be blown or pumped into the Cells using soil blowing equipment.

Install in lifts that do not exceed twelve (12) inches. Lightly compact the soil inside the frames at each lift to remove air pockets and settle the soil within the frames. Steps may be taken to induce mild settling of the Engineered Soil bed as needed to prepare a stable planting medium and to completely fill the UTPC area. Vibrating plate-style compactors shall not be used to induce settling. If the planting soil becomes overly compacted, remove the soil and reinstall. Use hand tools or other equipment that does not damage the UTPCs. The top 1-2 inches of each post should remain exposed above the soil to allow the placement of the UTPC deck.

Walk-through the placed planting soil to remove air pockets and settle the soil. Do not compact greater than 80 percent of maximum dry density in accordance with ASTM D698, Standard Proctor Method. Check placed soil for compaction with a penetrometer or densitometer or similar.

Compact the first lift of backfill material, previously spread, to 95 percent of maximum dry density in accordance with ASTM D698, Standard Proctor Method or in accordance with Project Specifications for hardscape areas, whichever is greater. Add and compact additional backfill material so that the final finished elevation is at approximately the same level of the placed planting soil within the UTPCs. Maintain the geogrid between the UTPC system and the backfill material at all times.

Place the second lift of backfill material loosely around the perimeter of the UTPC system, between the geogrid and the sides of the excavation so that the material is 2 to 3 inches below the top of the posts. Do not compact. Place the second lift of planting soil inside of the UTPC to the bottom of the Strongbacks. Walk through.

Installation of UTPC Deck

Obtain final approval by the Construction Engineer of Engineered Soil installation prior to installation of the UTPC decks. Remove Strongbacks, level out the Engineered Soil, and immediately install decks over the posts below. Place deck over the top of the posts. Push decks down until the deck clips lock into the posts, snapping the deck into place. Fold the 12 inches (300 mm) of geogrid onto the top of the decks.

Final Backfill Placement and Compaction

Place and compact final lift of backfill material to 95 percent of maximum dry density in accordance with ASTM D698, Standard Proctor Method, such that the backfill is flush with the top of the installed deck. Do not allow compacting equipment to come in contact with the decks.

Installation of Geotextile and Aggregate Base Course over the Deck

Place geotextile over the top of the deck and extend to the edge of the excavation. Overlap joints a minimum of 18 inches (450 mm). Leave enough slack in the geotextile for the aggregate base course to push the geotextile down in the gaps in between the decks.

Install the aggregate base course over the geotextile immediately after completing the installation of the fabrics. Work the aggregate from one side of the layout to the other so that the fabric and aggregate conform to the UTPC deck contours. Maintain equipment used to place aggregate base course completely outside the limits of the UTPC excavation area to prevent damage to the installed system. For large or confined areas, where aggregate cannot easily be placed from the edges of the excavated area, obtain approval for the installation procedure and types of equipment to be used in the installation from the UTPC manufacturer.

Compact aggregate base course(s) to 95 percent of maximum dry density in accordance with ASTM D698, Standard Proctor Method. Utilize a vibration or plate compactor with a maximum weight of 800 lbs (362.87 kg).

Do not drive vehicles or operate equipment over the completed aggregate base course.

Installation of Concrete Walk about the UTPC System

Use care when placing paving or other backfill on top of UTPC system to prevent damage to the UTPC system or its components. Place Concrete Walk per UTPC manufacturer's recommendation and per Special Provision 30-D Concrete Walk. Note: the UTPC system does not fully meet loading strength until the final paving is installed. Do not operate construction equipment on top of the UTPC system until paving installation has been completed.

Installation of Engineered Soil within the Tree Planting Area (By Others)

Associated Engineered Soil to be placed below and around tree roots/rootball will be furnished by the Contractor but installed by the City. See Spec. Prov. 30 – N for more information. City forces will install the tree and associated Engineered Soil of the size and species as identified and at locations as shown on the plans.

Remove rubble, debris, dust and silt from the top of the Engineered Soil within the tree opening that may have accumulated after the initial installation of the Engineered Soil within the UTPCs. Install additional Engineered Soil within the tree openings, to the depths indicated on the plans. Use the same soil used within the UTPCs for Engineered Soil within the tree openings.

Compact Engineered Soil under the tree root ball to between 85 and 90 percent of maximum dry density in accordance with ASTM D698, Standard Proctor Method, to prevent settlement of the root ball. Place trees in accordance with the plans.

All costs associated with this work shall be included in the unit price bid for Urban Tree Planting Cell System. One unit (EACH) for measurement and payment shall be for a 2x system as shown on the plans and described in these Special Provisions. A double layer system includes one (1) 24-inch x 48-inch x 30.9-inch UTPC (one (1) base, six (6) 2x posts, one (1) deck), aggregate base course, geotextile fabric, geogrid, all associated materials (anchoring pins, strongbacks, plastic cable ties, wood blocking, etc.). general backfill for areas adjacent to the UTPCs, and any other materials and work to provide a complete UTPC System per the manufacturer's specification/recommendations, plans, and these Special Provisions. Payment for Engineered Soil will be paid under a separate bid item. Payment for the Granular Base Course placed above the UTPCs will be paid under a separate bid item.

I. GEOMEMBRANE BARRIER - BID ITEM NUMBER 80053

This item consists of furnishing and installing, per manufacturer's recommendations, a Geomembrane Barrier at locations indicated on the plans. The work shall include but is not limited to preparing areas to receive Geomembrane barrier per Manufacturer's recommendation, and furnishing and installing Geomembrane Barrier to provide a watertight barrier between the UTPCs and existing foundations, structures, etc. at locations as shown on the plans, and any other materials and labor to complete the work.

Geomembrane Barrier shall be 100% post-consumer high density polyethylene (HDPE). The liner shall be a minimum of 0.040 inches (1.016 mm) thick and come in a minimum 60 inch (1220 mm) wide roll. At the end of rolls or when joining two pieces of membrane together provide silicone sealant or other approved method per manufacturer's recommendation to be used to create permanent water tight seams. Geomembrane Barrier shall be DeepRoot Green Infrastructure, LLC, Duraskrim K30B by US Fabrics Inc., or approved equal capable of provided a watertight while blocking root growth of large trees and plants.

Install Geomembrane Barrier as indicated on shop drawings, per plans, and in accordance with manufacturer's installation instructions. Use specified material widths required for project conditions.

Where material requires seaming at the end of the roll, overlap geomembrane a minimum of 6" (150mm), using manufacturer approved silicone sealant or other approved method. Where material requires seaming to create a larger sheet-like material, overlap geomembrane a minimum 6" (150mm) and seal using a manufacturer approved silicone sealant or other approved method. Ensure consistent seal across entire seam. All seams shall be permanent and water tight.

Install geomembrane vertically, immediately adjacent to structure that requires protection from lateral water migration or as shown on the plans. Extend the Geomembrane along foundations a minimum of two (2) feet below UTPCs and four (4) feet beyond the horizontal extents of the UTPCs.

Where installation occurs below new Concrete Walk, top of geomembrane shall be installed nine (9) inches below the grade of walk pavement. Where installation occurs between UTPCs and existing building faces/foundations the Geomembrane Barrier shall be installed ¼" below the adjacent new Concrete Walk surface and a watertight joint sealer shall be used between the building face and adjacent concrete sidewalk. See Special Provision Section 30-D for Concrete Walk for requirements for the watertight joint sealer.

All costs associated with this work shall be included in the unit price bid for Geomembrane Barrier.

J. DECORATIVE LANDSCAPE CRUSHED STONE - BID ITEM NUMBER 80054

This item consists of furnishing and installing crushed angular decorative landscape stone, weed barrier fabric, etc. around trees at locations as indicated on the plans.

Furnish crushed angular decorative landscape stone that varies in size from ¼"-3/4" in average diameter. Provide "Mountain Shadows" type crushed stone mulch of natural granite stone with a color mixture consisting of grays, pinks, tans, browns, and charcoals that are typical of quarries found in southeastern Wisconsin or approved equal.

This crushed stone will be used to fill in around plantings at new tree planting locations. Stone shall be placed on a weed barrier fabric and at a depth of four (4) inches. Stone shall terminate to match the elevation of the adjacent curb, sidewalk, etc. Stone shall be compacted with a plate compactor or by hand as needed to create a level bed surface.

All costs associated with this work shall be included in the unit price bid for Decorative Landscape Crushed Stone.

K. 6" DIA. PERFORATED (DISTRIBUTION/UNDERDRAIN) PVC PIPE AND ROCK COLLAR- BID ITEM NUMBER 80055

This item consists of furnishing and installing 6-inch dia. perforated distribution and underdrain pipes with geotextile fabric and rock collar within the Urban Tree Planting Cell Systems as show on the plans. The work shall include but not be limited to furnishing and installation of 6" perforated distribution and underdrain pipes, rock collar, geotextile fabric, connections to the other storm sewer pipes and/or to inlets, end caps on all end pieces, and all tees, wyes, fittings necessary.

Pipe shall be perforated polyvinyl chloride (PVC) plastic pipe conforming to ASTM D3034. The pipe should have 3/8-inch perforations, spaced at 6-inch centers, with a minimum of 4 holes per row.

Distribution and underdrain pipe shall be placed in a one (1) foot diameter rock collar with a single layer of geotextile fabric placed above the rock collar between the rock collar and Engineered Soil layers and extend one (1) foot on either side of the perforated PVC pipe. See drawings on Plan File No. 241-25 for detail. Aggregate use in the rock collar shall be for 3/8 inch washed dry pea gravel meeting the requirements of 3/8 Inch Crushed Stone Chips (ASTM C-33 Size 8) per section 8.43.2 of the *STANDARD SPECIFICATIONS* and as modified in these Special Provisions. The required material gradation is as follows:

| <u>Sieve Size</u> | <u>Percentage Passing by Weight</u> |
|-------------------|-------------------------------------|
| ½ Inch | 100% |
| 3/8 Inch | 85 – 100% |
| No. 4 | 10 – 30% |
| No. 8 | 0 – 10% |
| No. 16 | 0 – 5% |

Geotextile fabric shall be non-woven, needle-punched polypropylene (PP), polyester (PET), stabilized nylon, polyethylene, or polyvinylidene chloride meeting the requirements of WisDOT Type DF, Schedule B. Provide Tensar North American Green 130EX, US Fabric US 180NW, WINFAB 700N, or approved equal. Geotextile fabric shall be insect free, rodent free, mildew free, and rot resistant. Geotextile fabric shall be in a wrapping that protects the fabric from ultraviolet radiation and from abrasion due to shipping and hauling. Contractor shall keep the Geotextile fabric dry until installed.

Lay pipe at the elevation and grade as indicated on the places. Securely connect sections of PVC pipe with solvent-cemented or gasketed joints. Unless directed otherwise, lay perforated drainage pipe with the perforations on the underside of the pipe. All perforated pipes shall be placed 1' minimum from the street lighting cables and spaced evenly. Close the dead ends of pipes securely with plugs fabricated from the same material used in the pipe.

When placing the layers of Geotextile fabric the area must be dry, level, and smooth. Roll out the fabric and pull taut manually to remove wrinkles. Join parallel strips of fabric by overlapping or sewing. Seams shall be sewn or overlapped per the manufacturer's recommendations. Minimum overlaps at joints shall be 18 inches. Minimum overlaps at butt splices between fabric rolls shall be 36 inches. Provide weights or pins to prevent the wind from lifting the fabric. Cover all tears, holes, or rips in the fabric with a patch of fabric overlapping the defect 12 inches in all directions. Cover all fabric within 48 hours of placement.

All costs associated with this work shall be included in the unit price bid for 6" Dia. Perforated Distribution/Underdrain PVC Pipe and Rock Collar.

L. REMOVE AND DISPOSE EXCESS EXCAVATED MATERIAL - BID ITEM NUMBER 90075

This item consists of excavating, hauling, and disposing of materials removed to install the components of the UTPC system. The work shall include but is not limited excavating materials at locations and to the required limits and depths as shown on the plans or required to acceptably complete the work, and removing and legally disposing of the material.

Excavate to the depths and shapes indicated on the plans. Provide smooth and level excavation base free of lumps and debris. Confirm that the depth of the excavation is accurate and includes the full section of materials required to place the underdrain (where applicable), aggregate base course, UTPC, and pavement profile as indicated on the plans.

Over-excavate beyond the perimeter of the UTPCs as necessary to allow for the extension of aggregate base beyond the UTPC layout as shown on the plans and to provide adequate space for proper compaction of backfill around the UTPC system.

The Contractor shall implement excavation methods to ensure protection of the areas directly adjacent to proposed excavation. If excess materials are disturbed or excavated adjacent to the required areas as shown on the plans or below the elevations shown on the plans the Contractor shall replace them in kind at its own expense.

If conflicts arise during excavation notify the City Construction Engineer immediately and make recommendations for action. Proceed with work only when action is approved.

All costs associated with this work shall be included in the unit price bid for Remove and Dispose Excess Excavated Material. Removal of existing pavement, sidewalk, curb and gutter, and granular base course will be paid under a separate bid item(s).

M. ENGINEERED SOIL - BID ITEM NUMBER 91056

This item consists of furnishing and installing Engineered Soil in the Urban Tree Planting Cell (UTPC) System as shown on the plans. This work also includes furnishing and stockpiling onsite an additional two (2) cubic yards of Engineered Soil for installation by others (City Forestry Department). The work shall include but is not limited to providing all labor, equipment, and materials to furnish, mix, and install the engineered soil, which includes sand, compost and topsoil.

The soil mixture shall consist of a mixture of silica sand and compost. The mix shall be designed to approximate the following percentages by volume.

| Engineered soil component | Percentage composition (by volume) |
|---------------------------|------------------------------------|
| Silica sand | 70 |
| Compost | 30 |

Compost for the UTPC System -the compost shall meet the requirements of the Wisconsin Department of Natural Resources' (WDNR) Technical Standard 1004, Bioretention for Infiltration and WDNR Specification S100, Compost.

Sand for the UTPC System – the sand shall be USDA course sand (0.02 to 0.04 inch diameter), pre-washed to remove clay and silt particles, and well-drained or dried prior to mixing. Calcium carbonated, dolomitic sand, and other substitutions are not allowed. Sand shall meet ASTM C-33.

The Engineered Soil mixture shall have a pH between 5.5 and 6.5 and have adequate nutrient content to meet plant growth requirement. The soil mixture shall be free of rocks, stumps, roots, brush, or other material over one (1) inch in diameter. No other materials shall be mixed with the planting soil that may be harmful to plant growth or prove a hindrance to planting or maintenance.

The Contractor shall provide at least one person who shall be present at all times during the preparation and placement of the Engineered Soil, who shall be thoroughly familiar with the type and operation of equipment being used. Said person shall direct all work performed under this section.

Prior to placement in the UTPCs, the Engineered Soil shall be pre-mixed and the moisture content shall be low enough to prevent clumping and compaction during placement. The Engineered Soil shall be placed in multiple lifts, according to the UTPC manufacturer's recommendations. Steps may be taken to induce mild settling of the Engineered Soil bed as needed to prepare a stable planting medium and to fill the UTPCs to the deck. Vibrating plate-style compactors shall not be used to induce settling. Install Engineered Soil to the elevations and depths as indicated on the plans. Refer to Special Provision 30-H Urban Tree Planting Cell (UTPC) System for more information on the required placement of the Engineered Soil.

All costs associated with this work shall be included in the unit price bid for Engineered Soil.

N. TREE – FURNISHED AND INSTALLED BY OTHERS

All trees and tree support systems for the project will be furnished and installed by others (City Forestry Department). Associated Engineered Soil to be placed below and around tree roots/rootball will be furnished by the Contractor but installed by the City. Quantities for the additional Engineered Soil for City installation are included in the bid quantities for Engineered Soil (Bid Item No. 91056). The Contractor shall deliver and stockpile an additional two (2) cubic yards of Engineered Soil per tree at each individual location for installation by the City Forestry Department. City forces will install the tree and associated Engineered Soil of the size and species as identified and at locations as shown on the plans.

The Contractor shall contact Scott Baran of the City's Forestry Department at (414) 708-8209 a minimum of two (2) weeks prior to completion of individual sites so installation of trees and Engineered Soil can be coordinated.

Any costs associated with furnishing and delivering the required Engineered Soil will be paid under the bid item for Engineered Soil (Bid Item No. 91056).

O. 6" DIA. STORM WATER DRAIN, CLASS, "C" BEDDING – BID ITEM NUMBER 95014

This item consists of furnishing and installing 6" Diameter Storm Water Drain, Class "C" Bedding at locations as shown on the plans. The work shall include but is not limited to excavation, furnishing and placing bedding materials, coring new connections to existing storm sewers, catch basins, and/or structures, making all connections to new and existing work, and all pipe, tees, wyes, fittings, backfilling, etc. necessary to construct the drain per plans and specifications.

6" Dia. Storm Drain shall be SDR 35 polyvinyl chloride (PVC) conforming to ASTM D3034. Bedding Section shall meet the requirements per section 3.2.6 Pipe Sewer Bedding Sections of the *STANDARD SPECIFICATIONS*.

It is the Contractor's responsibility to verify the site and elevation of the all new and proposed connections of the piping and to notify the construction engineer if the drain pipe cannot be constructed to plan. The Contractor shall lay install the storm drains in the location, orientation, and slope as indicated on the plans. If a slope is not indicated on the plans the Contractor shall lay the storm drains with no less than 1/8-inch per foot of slope.

Securely connect sections of PVC pipe with solvent-cemented or gasketed joints.

The contractor will be required to handle all flow during construction and the reconnection to the sewer drains and inlets. The cost of bypassing and/or pumping flow around the project shall be included in the unit bid price.

All costs associated with this work shall be included in the unit price bid for 6" Dia. Storm Drain Class "C" Bedding.